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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/597,295	07/19/2006	Heui Tay An	KTSHIN.010APC	8906

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EXAMINER
YUNG, LISA S

ART UNIT	PAPER NUMBER
3662	

NOTIFICATION DATE	DELIVERY MODE
08/12/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jcartee@kmob.com
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Office Action Summary	Application No.	Applicant(s)	
	10/597,295	AN ET AL.	
	Examiner	Art Unit	
	LISA YUNG	3662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 July 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 July 2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *07/19/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement filed 07/19/2006 has been received and placed of record in file.

Response to Amendment

3. Applicant's amendment to claims filed 07/19/2006 has been received and placed of record in file.

Drawings

4. Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

Specification

5. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: "Ultrasonic distance measurement method and device by extracting the period of a received signal from noise using a dual-threshold comparator".

6. The disclosure is objected to because of the following informalities: ¶42 line 2: "FIG. 2" should be "FIG. 7". Appropriate correction is required.

Claim Objections

7. Claims 4 and 5 are objected to because of the following informalities:

a. Claim 4: part a, line 1: "transmitting a ultrasonic" should be "transmitting an ultrasonic";

b. Claim 4: part e, lines 1-2: "the predetermined signal levels" lack antecedent basis; perhaps the applicant meant "predetermined signal levels";

c. Claim 4: part f, line 2: "continuously occurs repeatedly" is redundant and thus confusing; one adverb should be sufficient;

d. Claim 4: part f, line 3: "an pre-determined range" should be "a predetermined range" for consistency; and

e. Claim 5: the second part e should be labeled part g.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crosby (US 5150334) in view of Metchev (US 4376990).

Regarding claim 1, Crosby teaches a method of measuring a distance using an ultrasonic wave (abstract), the method comprising steps of:

a) receiving through the ultrasonic sensor (transducer 16, col. 4 lines 50-52) a signal generated from an ultrasonic transmitter (transducer 16, col. 4 lines 30-34) according to a signal of ultrasonic transmission time (col. 4 lines 34-44);

b) amplifying the received signal (gain stepping circuit 32, col. 4 lines 50-54);

d) outputting only a signal corresponding to a predetermined signal size from the signal (comparator 26, col. 5 lines 3-12); and

e) computing a distance value by calculating the period of the output signal (col. 6 lines 36-45, col. 3 lines 28-30).

Crosby does not teach filtering a high-frequency wave from the amplified signal. Metchev teaches an ultrasonic transit time measuring device (abstract) that includes a

filter stage that tunes the frequency of the received signal (col. 1 line 68 to col. 2 line 3); tuning the frequency of the received signal. It would have been obvious to modify Crosby by filtering a high-frequency wave from the amplified signal in order to filter out external frequencies connected with the signal generator (col. 2 lines 2-3).

Regarding claims 2 and 6, Crosby further teaches a comparator (comparator 36, col. 5 line 18) that has a predetermined signal level composed of an upper limit (e.g., threshold 44a, col. 5 lines 42-44) and a lower limit (e.g., threshold 44b, col. 5 lines 51-53), and is configured so as not to output a signal between the upper and the lower limit (see Fig. 2 PASS 1-2, col. 5 lines 42-56).

Regarding claim 3, Crosby and Metlev do not teach amplifying the received signal so that the noise except for the ultrasonic signal is unsaturated; however, avoiding saturation of the noise during amplification is well-known in the art. It would have been obvious to modify Crosby and Metlev by amplifying the received signal in such a way that the noise is unsaturated in order to accurately extract the transmitted target signal.

Regarding claim 4, Crosby teaches a method of measuring a distance using an ultrasonic wave (abstract), the method comprising steps of:

a) transmitting an ultrasonic transmission timing to an ultrasonic transmitter through a cable (col. 4 lines 34-44);

b) receiving through an ultrasonic sensor a signal generated from the ultrasonic transmitter according to the ultrasonic transmission timing signal (col. 2 lines 35-37);

c) amplifying the received signal (col. 4 lines 50-54);

e) storing the time when the signal intersects predetermined signal levels (col. 6 lines 12-28);

f) determining as an arrived signal a signal in which a difference between the previous and current values of the stored time occurs repeatedly over a certain

number of times within a pre-determined range (col. 3 lines 2-6, col. 6 lines 36-45), and converting the time difference between the signal of ultrasonic transmission time and the arrived signal into a measured distance (col. 6 lines 40-45, lines 64-67).

Crosby does not teach filtering a high-frequency wave from the amplified signal. Metchev teaches an ultrasonic transit time measuring device (abstract) that includes a filter stage that tunes the frequency of the received signal (col. 1 line 68 to col. 2 line 3); tuning the frequency of the received signal. It would have been obvious to modify Crosby by filtering a high-frequency wave from the amplified signal in order to filter out external frequencies connected with the signal generator (col. 2 lines 2-3).

Regarding claim 5, Crosby teaches an apparatus for measuring distance using an ultrasonic wave (abstract) that includes an ultrasonic transmitter (transducer 16, col. 4 lines 30-34), means for transmitting a synchronized signal in a cable in order to transmit an ultrasonic transmission signal (col. 4 lines 34-44), an ultrasonic sensor (transducer 16, col. 4 lines 50-52), an amplifier (RECEIVER GAIN CONTROL, col. 4 lines 50-54), a comparator (comparator 36, col. 5 line 18), and a processing unit (control circuit 26, col. 5 lines 12-15).

Crosby does not teach a filter. Metchev teaches an ultrasonic transit time measuring device (abstract) that includes a filter stage that tunes the frequency of the received signal (col. 1 line 68 to col. 2 line 3); tuning the frequency of the received signal. It would have been obvious to modify Crosby by filtering a high-frequency wave from the amplified signal in order to filter out external frequencies connected with the signal generator (col. 2 lines 2-3).

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- Forster (US 4974214), which teaches a method for suppressing interference signals while extracting echo transit time;

- Mackey (US 3896411), which teaches a sonar receiver that has a gain control in accordance with current and expected reverberation conditions;
- Welke (US 6556511 B1), which teaches using a sampling window with upper and lower thresholds to extract the arrival time of an echo.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LISA YUNG whose telephone number is (571) 270-1467. The examiner can normally be reached on Mon-Fri 7:30AM-5PM, Alt. Fri., Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas H. Tarcza can be reached on (571) 272-6979. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Lisa Yung
Examiner, Art Unit 3662
08-03-2008

/LSY/

/Thomas H. Tarcza/
Supervisory Patent Examiner, Art Unit 3662